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Autoimmunity 2017 : Evaluation a cost effective less-sensitive enzyme immunoassay for estimating early HIV seroincidence - Vinay Khanna - Manipal University

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Background & Aim:
Usually molecular methods, such as the detection of viral RNA or proviral DNA are the most sensitive methods for early diagnosis of HIV type-1; these methods involve complex and expensive technologies and thus have remained largely unavailable in resource-poor settings in the developing world. In this study, we tried to employ new less sensitive HIV1 immunoassay using avidity method in conjunction with the sensitive enzyme immunoassay to differentiate persons with recent and long-standing HIV-1 infections.

Methods:
This study was conducted in tertiary care center in south India. Consecutive serum samples (n=261) obtained from HIV seropositive patients of more than 15 years of age. Written informed consent, Epidemiological, clinical and laboratory details were obtained from all participants. All cases of HIV-1 infection was tested with standard ELISA and confirmed by western blot test. These samples were further tested by avidity index method and affinity studies to distinguish patients with recent from established HIV-1. Avidity index ≤0.9 were taken as cut off value for recent HIV infection with duration of HIV for less than 6 months.

Results:
Out of 261 patients, 26 patients were found with avidity test value of less than or equals to 0.9 and were classified as recent seroconvertors with antibodies appeared in serum for ≤6 months and 235 patients with avidity value of >0.9 were placed as long term cases with antibodies circulated for >6 months of duration. Out of 26 cases of recent infection one case was misclassified as recently infected using avidity immunoassay method while clinical history were suggestive of long term infection.

Conclusions:
The avidity index immunoassay was developed for easy performance characteristics, inexpensive, time-saving and does not need sophisticated laboratory requirements. This technique can also be performed in field setting for identifying recent infections, although there are chances of misclassification is possible in individual who had long-standing infection. The identification of recent infections based on the combination of other methods needs further investigation to reduce misclassification and to find out true incidence of HIV at the earliest. An immunoassay is a biochemical test that quantifies the nearness or grouping of a macromolecule or a little particle in an answer using a counter acting agent (for the most part) or an antigen (some of the time). The atom identified by the immunoassay is frequently alluded to as an "analyte" and is much of the time a protein, despite the fact that it might be different sorts of particles, of various size and types, as long as the correct antibodies that have the satisfactory properties for the measure are created. Analytes in organic fluids, for example, serum or pee are much of the time estimated utilizing immunoassays for clinical and inquire about purposes. Immunoassays come in various organizations and varieties. Immunoassays might be run in numerous means with reagents being included and washed away or isolated at various focuses in the test. Multi-step tests are regularly called partition immunoassays or heterogeneous immunoassays. A few immunoassays can be done essentially by blending the reagents and test and making a physical estimation. Such measures are called homogeneous immunoassays, or less habitually non-detachment immunoassays. The utilization of a calibrator is regularly utilized in immunoassays. Calibrators are arrangements that are known to contain the analyte being referred to, and the convergence of that analyte is commonly known. Examination of a measure's reaction to a genuine example against the test's reaction created by the calibrators makes it conceivable to decipher the sign quality as far as the nearness or grouping of analyte in the example. Immunoassays depend on the capacity of a counter acting agent to perceive and tie a particular macromolecule in what may be a perplexing blend of macromolecules. In immunology the specific macromolecule limited by a neutralizer is alluded to as an antigen and the region on an antigen to which the counter acting agent ties is called an epitope. At times, an immunoassay may utilize an antigen to identify for the nearness of antibodies, which perceive that antigen,

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in an answer. At the end of the day, in certain immunoassays, the analyte might be a neutralizer as opposed to an antigen. Notwithstanding the official of a counter acting agent to its antigen, the other key component of all immunoassays is a way to deliver a quantifiable sign because of the authoritative. Most, however not all, immunoassays include synthetically connecting antibodies or antigens with a perceptible name. An enormous number of marks exist in current immunoassays, and they take into consideration recognition through various methods. Numerous marks are perceptible on the grounds that they either emanate radiation, produce a shading change in an answer, fluoresce under light, or can be prompted to discharge light. Immunoassays can be run in various arrangements. For the most part, an immunoassay will can be categorized as one of a few classifications relying upon how it is run. Serious, homogeneous immunoassays: In a serious, homogeneous immunoassay, unlabelled analyte in an example contends with named analyte to tie an immunizer. The measure of named, unbound analyte is then estimated. In principle, the more analyte in the example, the more named analyte gets uprooted and afterward estimated; subsequently, the measure of marked, unbound analyte is relative to the measure of analyte in the example. Two-site, noncompetitive immunoassays normally comprise of an analyte "sandwiched" between two antibodies. ELISAs are frequently run in this arrangement. Serious, heterogeneous immunoassays: As in a serious, homogeneous immunoassay, unlabelled analyte in an example contends with marked analyte to tie a counter acting agent. In the heterogeneous tests, the named, unbound analyte is isolated or washed away, and the staying named, bound analyte is estimated. One-site, noncompetitive immunoassays: The obscure analyte in the example ties with marked antibodies. The unbound, marked antibodies are washed away, and the bound, named antibodies are estimated. The power of the sign is straightforwardly relative to the measure of obscure analyte.

Biography

Vinay Khanna has completed his MBBS and MD Microbiology from Kasturba Medical College, Manipal University, Karnataka, India. He is presently working as an Associate Professor in Department of Microbiology, Kasturba Medical College, India. He has published 18 papers in indexed national and international journals.

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